
EXECUTIVE SUMMARY

Purpose of This Report

The Annual Site Environmental Report (ASER) for the West Valley Demonstration Project (WVDP or Project) is published to provide information about environmental conditions at the WVDP to members of the public living near the site, to the United States (U.S.) Department of Energy (DOE) Headquarters, and to other interested stakeholders. In accordance with DOE Order 231.1A, "Environment, Safety, and Health Reporting," this report summarizes calendar year (CY) 2007 environmental monitoring data so as to describe the performance of the WVDP's environmental management system (EMS), confirm compliance with standards and regulations, and highlight important programs. Activities at the WVDP are being conducted in cooperation with the New York State Energy Research and Development Authority.

Major Site Programs

The WVDP is located on the site of a former commercial nuclear fuel reprocessing plant, which was shut down in 1976. In 1980, Public Law 96-368 (the WVDP Act) was passed, which authorized the DOE to demonstrate a method for solidifying 600,000 gallons (2.3 million liters) of liquid high-level radioactive waste (HLW) that remained at the West Valley site. Vitrification of the HLW, begun in 1996, was completed in September 2002. Activities for decontaminating and dismantling the facilities and for managing and disposing of wastes were then initiated and continued through CY 2007. The major activities that occurred in 2007 are described below.

Contractor Transition. On June 29, 2007, the DOE awarded a new four-year WVDP Interim End-State Contract for management operations at the WVDP to West Valley Environmental Services LLC (WVES). The previous contractor, West Valley Nuclear Services Company (WVNSCO), prepared and delivered detailed Project turnover documentation to the DOE to ensure a seamless transition to the new operator. WVNSCO/WVES interfaced during the transition period, from July 1 through August 31, to maintain a comprehensive program for ongoing and proposed operations. On September 1, 2007, WVES assumed management

at the WVDP. All permits, licenses, and agreements were transitioned to WVES as appropriate. The scope of the new contract includes waste disposition, decontamination, deactivation, disposition of facilities, and infrastructure/landlord activities.

Waste Management and Shipment.

- Drum Cell Waste Shipped

By the end of October 2007, the remainder of the approximately 20,000 half-ton drums of cemented Class C low-level waste (LLW) were removed from storage in the drum cell and shipped to the Nevada Test Site for disposal. These shipments accounted for approximately 241.5 thousand cubic feet (ft^3) (6.8 thousand cubic meters [m^3]) of shipped waste. The drum cell shipping campaign was expected to take 2.5 years when it began in mid-2006. Instead, process improvements and efficiencies allowed the work to be completed more than one year ahead of schedule and nearly 50% below the original cost estimate.

- Main Plant Process Building Decontamination and Waste Management

Decontamination work was completed in the fuel receiving and storage area pump pit. Other waste processing and shipping activities included removing stored waste for processing and shipping for off-site disposal.

- Low-Level Waste

A total of approximately 109 thousand ft^3 (3.09 thousand m^3) of LLW was processed, packaged, and shipped for disposal.

- South Plateau Hardstand Cleanup

A concerted effort was made to remove excess materials from the south plateau. Stored waste was shipped for disposal, a leaded-glass window was returned to the manufacturer, a used fiberglass oil tank was transferred to a local town for waste oil storage, and two nonradioactive used stainless-steel tanks were sent off site for recycling.

- Infrastructure Reduction

Four additional structures (the test and storage building, maintenance shop, main 1 warehouse, and the schoolhouse), identified in DOE/EA-1552, were demolished and removed from the site. Combined with the 11 structures removed in 2006, 15 of the 36 structures scheduled for removal in DOE/EA-1552 have been demolished.

Key Initiatives

Environmental Performance Indicators. The WVDP has been recognized by the U.S. Environmental Protection Agency (EPA) as a charter member of the Performance Track (P-Track) Program for implementation of its EMS. In 2007, WVES renewed its application to the program by identifying four new performance goals for the WVDP. WVES, in conjunction with the DOE, submitted the P-Track annual performance report to the EPA in March 2008, for CY 2007, demonstrating the facility's progress toward its performance commitments and to maintain qualifications under the program. The commitments (to be met by the end of CY 2009 with CY 2006 as the baseline) and the 2007 annual reporting accomplishments were to reduce the following:

- total nontransportation energy usage by 5%: total energy usage was reduced by 15.6% in CY 2007;
- amount of liquid nitrogen used by 10%: liquid nitrogen usage was reduced by 45.3% in CY 2007;
- amount of resins used for the treatment of radio logically contaminated wastewater generated by plant operations by 10%: this goal is in the planning stages with engineering and design efforts complete in CY 2007 and planning for implementation in CY 2008; and
- amount of sulfur oxide (SO_x) air emissions from nontransportation purposes by 10%: SO_x emissions were reduced by 61.4% in CY 2007.

Pollution Prevention/Waste Minimization. In 2007, as part of the site's EMS, a long-term waste minimization and pollution prevention program to promote affirmative procurement and minimize the generation of LLW, mixed waste, hazardous waste, industrial waste, and sanitary waste continued at the WVDP. The program emphasized good business practices, source reduction, and recycling.

Environmental Management System

The WVDP EMS satisfies the requirements of DOE Order 450.1, "Environmental Protection Program." The WVDP EMS is a key part of the WVDP Integrated Safety Management System (ISMS). In 2007, WVDP employees continued to demonstrate their commitment to an all-inclusive approach to safety, coordinating the EMS with other safety management and work planning processes through the integrated environmental, health, and safety management program.

Compliance. Management at the WVDP continued to provide strong support for environmental compliance in 2007. Requirements and guidance from applicable state and federal statutes, executive orders, DOE orders, and standards are integrated into the Project's compliance program. In CY 2007:

- no notices of violation or inspection findings from any environmental regulatory agencies were received by the WVDP.
- inspections by the New York State Department of Environmental Conservation (NYSDEC) and the local department of health verified Project compliance with the applicable environmental and health regulations.
- waste management areas at the site were monitored in compliance with the Resource Conservation and Recovery Act (RCRA) §3008(h) Administrative Order on Consent.
- Project representatives met requirements of the Emergency Planning and Community Right-to-Know Act by collecting information about hazardous materials used at the Project and making this information available to the local community.
- no exceedances to State Pollutant Discharge Elimination System (SPDES) permit limits or to the EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) dose standard were noted in 2007.

Environmental Monitoring. As part of the EMS, environmental monitoring was continued on and near the site to detect and evaluate changes in the environment resulting from Project (or pre-Project) activities and to assess the effect of any such changes on the environment or human population. Within the environmental monitoring program, airborne and

waterborne effluents were sampled and environmental surveillance of the site and nearby areas was conducted.

- Radiological Releases

In 2007, the WVDP maintained six NESHAP permits for release of radiological airborne emissions. The primary controlled air emission point at the WVDP is the main plant ventilation stack.

Waterborne releases were from two primary sources. In 2007, treated process water was released in six batches from lagoon 3, totaling approximately 10.8 million gallons (40.7 million liters). The other primary source is from a well-characterized seepage on the north plateau of the WVDP that is contaminated with strontium-90 from pre-WVDP operations. Radiological concentrations and flow from north plateau seepage were closely monitored.

- Estimated Dose

In 2007, the estimated dose to a maximally exposed off-site individual (MEOSI) from airborne emissions at the WVDP was 0.0010 mrem (0.000010 mSv), about 0.01% of the 10-mrem NESHAP standard. Estimated dose from waterborne sources in 2007 was about 0.066 mrem (0.00066 mSv), with 0.012 mrem (0.00012 mSv) attributable to liquid effluent releases and 0.054 mrem (0.00054 mSv) attributable to the north plateau drainage.

Total estimated dose to the MEOSI from both airborne and waterborne sources in 2007 was 0.067 mrem (0.00067 mSv), about 0.067% of the annual 100-mrem DOE standard. In comparison, the average dose to a member of the public from natural background sources is 295 mrem per year.

Estimated dose to the population within a 50-mile (80-km) radius of the WVDP from DOE activities in 2007 was 0.33 person-rem (0.0033 person-Sv). This same population would have received approximately 453,000 person-rem from natural background radiation in 2007.

- Dose to Biota

An evaluation of dose to biota for CY 2007, as part of the WVDP environmental monitoring program, resulted in the conclusion that populations of aquatic and terrestrial biota (both plants and ani-

mals) are not being exposed to doses in excess of the existing DOE dose standard for native aquatic animal organisms (1 rad/day) nor the recommended thresholds for terrestrial animals (0.1 rad/day) and plants (1 rad/day).

- Nonradiological Releases

Nonradiological releases from Project wastewater and storm water monitoring points were measured under the site's SPDES permit. In 2007, no exceedances of any permit limits were noted.

Groundwater Monitoring and North Plateau Characterization. Monitoring of groundwater at the WVDP continued in 2007, including monitoring of strontium-90 activity in and around the groundwater plume on the north plateau. In late 2007, the DOE submitted to the NYSDEC a draft "Sampling and Analysis Plan for Characterization of the North Plateau Plume Area" and a draft "Sampling Plan for Background Subsurface Soil Data on the North Plateau." These investigative programs will be completed in 2008, and will provide information to further characterize and evaluate groundwater and soils in the north plateau strontium-90 plume area. The effort will enhance decision-making strategies for reducing the downgradient migration of the leading edge of the strontium-90 plume.

The Nuclear Regulatory Commission (NRC)-Licensed Disposal Area (NDA). An Interim Measure (IM) Workplan for the NDA was completed under the RCRA §3008(h) Administrative Order on Consent, with the stated goals being to improve the integrity of the earthen cap over the NDA and to limit water infiltration. The IM, which was started in 2007 and will be completed in 2008, includes the installation of a geosynthetic cap over the NDA, a low-permeability subsurface groundwater cut-off (slurry wall) upgradient of the NDA, and surface water drainage diversions.

Quality Assurance. In 2007, implementation of a quality assurance program for activities supporting the environmental monitoring and groundwater monitoring programs continued at the WVDP. As part of this ongoing effort, on-site and subcontract laboratories that analyze WVDP environmental samples participated in independent radiological and nonradiological constituent performance evaluation studies. In these studies, test environmental samples with concentrations known by the testing agency, but unknown by the laboratory, were analyzed. Of almost

170 performance evaluation analyses conducted by or for the WVDP, 98.7% fell within acceptance limits.

Several inspections, audits, and assessments of components of the environmental monitoring program were conducted in 2007. Although actions were recommended to improve the program, nothing was found that would compromise the data quality in this report or the environmental monitoring program in general.

Conclusion

In addition to demonstrating compliance with environmental regulations and directives, evaluation of data collected in 2007 continued to indicate that WVDP activities pose no threat to public health or safety, or to the environment.